



SEQUENCE LISTING

<110> Kawasaki, Hiroaki
Graybiel, Ann
Housman, David

<120> Genes Integrating Signal Transduction Pathways

<130> MIT-103

<140> US 09/422,999

<141> 1999-10-22

<150> US 60/105,507

<151> 1998-10-23

<150> US 60/108,685

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<170> PatentIn version 3.3

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Pro Gly Arg Arg Ser Ser Arg Pro Pro Glu Ile Arg Glu Glu Glu Val	
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Gln Thr Val Glu Asp Gly Val Phe Asp Ile His Leu	
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Tyr Trp Val Ser Ala Phe Pro Ala Glu Phe Asp Leu Asn Pro Glu Leu
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Arg Arg His Ser Ser Leu Ile Asp Ile Glu Ser Val Pro Thr Tyr Lys
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His Leu Thr Tyr Leu Glu Tyr Arg Ser Phe Cys Lys Ile Leu Phe Gln
165 170 175

Asp Tyr His Ser Phe Val Thr His Gly Cys Thr Val Asp Asn Pro Val
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Arg His Cys Lys Ala Leu Ile Leu Gly Ile Tyr Lys Gln Gly Leu Lys				
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Met Ala Gly Thr Leu
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Asp Leu Asp Lys Gly Cys Thr Val Glu Glu Leu Leu Arg Gly Cys Ile
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Glu Ala Phe Asp Asp Ser Gly Lys Val Arg Asp Pro Gln Leu Val Arg
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Ala Lys Leu Leu His Ile Tyr Gln Gln Ser Arg Lys Asp Asn Ser Asn
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Val Thr His Gly Cys Thr Val Asp Asn Pro Val Leu Glu Arg Phe Ile	
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His Ser His Val Ser Pro Glu Thr Ile Lys Leu Trp Glu Gly Leu Thr	
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Glu Leu Val Thr Ala Thr Gly Asn Tyr Gly Asn Tyr Arg Arg Arg Leu	
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Arg Arg His Ser Ser Leu Ile Asp Ile Asp Ser Val Pro Thr Tyr Lys
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Trp Lys Arg Gln Val Thr Gln Arg Asn Pro Val Gly Gln Lys Lys Arg
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Lys Met Ser Leu Leu Phe Asp His Leu Glu Pro Met Glu Leu Ala Glu
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His Leu Thr Tyr Leu Glu Tyr Arg Ser Phe Cys Lys Ile Leu Phe Gln
 165 170 175

Asp Tyr His Ser Phe Val Thr His Gly Cys Thr Val Asp Asn Pro Val
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Leu Met Ile Leu Ser Lys Pro Thr Ala Pro Gln Arg Ala Leu Val Ile
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Thr His Phe Val His Val Ala Glu Lys Leu Leu Gln Leu Gln Asn Phe
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Asn Thr Leu Met Ala Val Val Gly Gly Leu Ser His Ser Ser Ile Ser
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Arg Leu Lys Glu Thr His Ser His Val Ser Pro Glu Thr Ile Lys Leu
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Trp Glu Gly Leu Thr Glu Leu Val Thr Ala Thr Gly Asn Tyr Gly Asn
 275 280 285

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Gly Val His Leu Lys Asp Leu Val Ala Leu Gln Leu Ala Leu Pro Asp
 305 310 315 320

Trp Leu Asp Pro Ala Arg Thr Arg Leu Asn Gly Ala Lys Met Lys Gln
 325 330 335

Leu Phe Ser Ile Leu Glu Glu Leu Ala Met Val Thr Ser Leu Arg Pro
 340 345 350

Pro Val Gln Ala Asn Pro Asp Leu Leu Ser Leu Leu Thr Val Ser Leu
 355 360 365

Asp Gln Tyr Gln Thr Glu Asp Glu Leu Tyr Gln Leu Ser Leu Gln Arg
 370 375 380

Glu Pro Arg Ser Lys Ser Ser Pro Thr Ser Pro Thr Ser Cys Thr Pro
 385 390 395 400

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Val Ser Tyr Phe Leu Arg Ser Ser Ser Val Leu Gly Gly Arg Met Gly
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Phe Val His Asn Phe Gln Glu Ser Asn Ser Leu Arg Pro Val Ala Cys
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Arg His Cys Lys Ala Leu Ile Leu Gly Ile Tyr Lys Gln Gly Leu Lys
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Cys Arg Ala Cys Gly Val Asn Cys His Lys Gln Cys Lys Asp Arg Leu

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Ser Val Glu Cys Arg Arg Arg Ala Gln Ser Val Ser Leu Glu Gly Ser
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Ala Pro Ser Pro Ser Pro Met His Ser His His His Arg Ala Phe Ser
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ccagggggcgc agagagccgc ggcc atg gga acc ctg ggc aag gcg aga gag 171
Met Gly Thr Leu Gly Lys Ala Arg Glu
1 5
gct ccg cgg aaa cct tgc cat ggc tcc aga gct ggc ccc aaa gga aga 219
Ala Pro Arg Lys Pro Cys His Gly Ser Arg Ala Gly Pro Lys Gly Arg
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Leu Glu Ala Lys Ser Thr Asn Ser Pro Leu Pro Ala Gln Pro Ser Leu
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gcc cag atc acc cag ttc cga atg atg gtg tcc ctg gga cat ctg gcc 315
Ala Gln Ile Thr Gln Phe Arg Met Met Val Ser Leu Gly His Leu Ala
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aaa gga gcc agc ctg gat gat ctt att gac agc tgc att caa tct ttc 363
Lys Gly Ala Ser Leu Asp Asp Leu Ile Asp Ser Cys Ile Gln Ser Phe
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ctc atg aat cta tat aag gac gcc ctg gaa aag aat tct cca gga att Leu Met Asn Leu Tyr Lys Asp Ala Leu Glu Lys Asn Ser Pro Gly Ile 110 115 120	507
tgc ttg aag atc tgc tat ttt gtc agg tat tgg ata aca gaa ttc tgg Cys Leu Lys Ile Cys Tyr Phe Val Arg Tyr Trp Ile Thr Glu Phe Trp 125 130 135	555
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ccc acc cca cag ctc cgg gca gag gtc ttc atc aag ttc atc cat gtg Pro Thr Pro Gln Leu Arg Ala Glu Val Phe Ile Lys Phe Ile His Val 270 275 280	987
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Ser	Pro	Leu	Pro	Ala	Gln	Pro	Ser	Leu	Ala	Gln	Ile	Thr	Gln	Phe	Arg	35	40	45	
Met	Met	Val	Ser	Leu	Gly	His	Leu	Ala	Lys	Gly	Ala	Ser	Leu	Asp	Asp	50	55	60	
Leu	Ile	Asp	Ser	Cys	Ile	Gln	Ser	Phe	Asp	Ala	Asp	Gly	Asn	Leu	Cys	65	70	75	80
Arg	Ser	Asn	Gln	Leu	Leu	Gln	Val	Met	Leu	Thr	Met	His	Arg	Ile	Ile	85	90	95	
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Val	Arg	Tyr	Trp	Ile	Thr	Glu	Phe	Trp	Ile	Met	Phe	Lys	Met	Asp	Ala	130	135	140	
Ser	Leu	Thr	Ser	Thr	Met	Glu	Glu	Phe	Gln	Asp	Leu	Val	Lys	Ala	Asn	145	150	155	160
Gly	Glu	Glu	Ser	His	Cys	His	Leu	Ile	Asp	Thr	Thr	Gln	Ile	Asn	Ser	165	170	175	
Arg	Asp	Trp	Ser	Arg	Lys	Leu	Thr	Gln	Arg	Ile	Lys	Ser	Asn	Thr	Ser	180	185	190	
Lys	Lys	Arg	Lys	Val	Ser	Leu	Leu	Phe	Asp	His	Leu	Glu	Pro	Glu	Glu	195	200	205	
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Ser Ile Ser Arg Leu Lys Glu Thr Ser Ser His Val Pro His Glu Ile
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Pro Pro Leu Asp Ala Asn Lys Asp Leu Val His Leu Leu Thr Leu Ser
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Leu Asp Leu Tyr Tyr Thr Glu Asp Glu Ile Tyr Glu Leu Ser Tyr Ala
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Arg Glu Gly Leu Ile Ser Arg Asp Glu Ile Thr Ala Tyr Phe Met Arg				
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Ala Ser Ser Ile Tyr Ser Lys Leu Gly Leu Gly Phe Pro His Asn Phe				
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Gln Glu Thr Thr Tyr Leu Lys Pro Thr Phe Cys Asp Asn Cys Ala Gly				
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Phe Leu Trp Gly Val Ile Lys Gln Gly Tyr Arg Cys Lys Asp Cys Gly				
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Met Asn Cys His Lys Gln Cys Lys Asp Leu Val Val Phe Glu Cys Lys				
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Lys Arg Ser Lys Ser Pro Ala Val Ser Thr Glu Asn Ile Ser Ser Val				
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Val Pro Met Ser Thr Leu Cys Pro Leu Gly Thr Lys Asp Leu Leu His				
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Ala Pro Glu Glu Gly Ser Phe Ile Phe Gln Asn Gly Glu Val Val Asp				
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His Ser Glu Glu Ser Lys Asp Arg Thr Ile Met Leu Leu Gly Val Ser				
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Ser Gln Lys Ile Ser Val Arg Leu Lys Arg Thr Val Ala His Lys Thr				
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Thr Gln Thr Glu Ser Phe Pro Trp Val Gly Gly Glu Met Pro Pro Gly				
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690 695 700

Val His Ser Pro Ala Ser Pro Cys Pro Ser Pro Ala Leu Val Arg Lys
705 710 715 720

Arg Ala Phe Val Lys Trp Glu Asn Lys Glu Ser Leu Ile Lys Pro Lys
725 730 735

Pro Glu Leu His Leu Arg Leu Arg Thr Tyr Gln Glu Leu Glu Gln Glu
740 745 750

Val Asn Thr Leu Arg Ala Asp Asn Asp Ala Leu Lys Ile Gln Leu Lys
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Met Gly Thr Leu
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gcc tct aaa gca aga cta gag gca aag cca gcc aac agc ccc ttc ccc 211
Ala Ser Lys Ala Arg Leu Glu Ala Lys Pro Ala Asn Ser Pro Phe Pro
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tcc cat ccc agc ttg gcc cac atc acc cag ttc cga atg atg gtg tct 259
Ser His Pro Ser Leu Ala His Ile Thr Gln Phe Arg Met Met Val Ser

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Leu Gly His Leu Ala Lys Gly Ala Ser Leu Asp Asp Leu Ile Asp Ser															
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Cys Ile Gln Ser Phe Asp Ala Asp Gly Asn Leu Cys Arg Ser Asn Gln															
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Asn Ser Pro Gly Leu Cys Leu Lys Ile Cys Tyr Phe Val Arg Tyr Trp															
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Thr Met Glu Glu Phe Gln Glu Leu Val Lys Ala Lys Gly Glu Glu Leu															
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Thr Leu Met Ala Val Ile Gly Gly Leu Cys His Ser Ser Ile Ser Arg	
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Leu Lys Glu Thr Ser Ser His Val Pro His Glu Ile Asn Lys Val Leu	
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Arg Arg Ala Tyr Gly Glu Cys Thr Asp Phe Lys Ile Pro Ile Leu Gly	
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Val His Leu Lys Asp Leu Ile Ser Leu Tyr Glu Ala Met Pro Asp Tyr	
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Leu Gly Asp Gly Lys Val Asn Val His Lys Leu Leu Ala Leu Tyr Asn	
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Ala Asn Lys Asp Leu Val His Leu Leu Thr Leu Ser Leu Asp Leu Tyr	
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Tyr Thr Glu Asp Glu Ile Tyr Glu Leu Ser Tyr Ala Arg Glu Pro Arg	
425 430 435	
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Lys His Val Gln Arg Met Val Asp Ser Val Phe Lys Asn Tyr Asp His	
470 475 480	
gac cag gat gga tac att tct cag gaa gaa ttt gaa aag att gct gcg	1603
Asp Gln Asp Gly Tyr Ile Ser Gln Glu Glu Phe Glu Lys Ile Ala Ala	
485 490 495 500	

agt ttt cca ttt tcc ttc tgt gtg atg gac aaa gac agg gaa ggc ctc Ser Phe Pro Phe Ser Phe Cys Val Met Asp Lys Asp Arg Glu Gly Leu 505 510 515	1651
atc agc agg gat gag atc aca gcc tac ttc atg aga gcc agc tca atc Ile Ser Arg Asp Glu Ile Thr Ala Tyr Phe Met Arg Ala Ser Ser Ile 520 525 530	1699
tat tcc aag ctg ggc ctg ggc ttt cct cac aac ttc caa gag acc acc Tyr Ser Lys Leu Gly Leu Gly Phe Pro His Asn Phe Gln Glu Thr Thr 535 540 545	1747
tac ctg aag ccc act ttt tgt gac aac tgt gct gga ttt ctc tgg gga Tyr Leu Lys Pro Thr Phe Cys Asp Asn Cys Ala Gly Phe Leu Trp Gly 550 555 560	1795
gtg atc aaa caa gga tat cga tgt aaa gac tgc ggg atg aac tgt cac Val Ile Lys Gln Gly Tyr Arg Cys Lys Asp Cys Gly Met Asn Cys His 565 570 575 580	1843
aaa caa tgc aaa gat ctg gtt gtg ttt gag tgt aag aag cga gcc aag Lys Gln Cys Lys Asp Leu Val Val Phe Glu Cys Lys Lys Arg Ala Lys 585 590 595	1891
aac cca gta gct ccc aca gag aac aac act tct gtg ggg cca gtg tcc Asn Pro Val Ala Pro Thr Glu Asn Asn Thr Ser Val Gly Pro Val Ser 600 605 610	1939
aac ctt tgc tca ttg gga gcc aaa gat ctg ctc cat gca cct gag gaa Asn Leu Cys Ser Leu Gly Ala Lys Asp Leu Leu His Ala Pro Glu Glu 615 620 625	1987
gga cct ttt aca ttc cct aat ggg gag gct gtg gaa cat ggt gag gag Gly Pro Phe Thr Phe Pro Asn Gly Glu Ala Val Glu His Gly Glu Glu 630 635 640	2035
agt aag gat cgg acc atc atg ctg atg gga gtg tcc tca cag aag att Ser Lys Asp Arg Thr Ile Met Leu Met Gly Val Ser Ser Gln Lys Ile 645 650 655 660	2083
tct ctt cgg ctg aag agg gct gtt gcc cac aag gcc acc cag act gaa Ser Leu Arg Leu Lys Arg Ala Val Ala His Lys Ala Thr Gln Thr Glu 665 670 675	2131
tca cag cct tgg att ggc agt gag ggc cct tca ggt ccc ttt gtg ctg Ser Gln Pro Trp Ile Gly Ser Glu Gly Pro Ser Gly Pro Phe Val Leu 680 685 690	2179
tct tcc cca agg aag aca gcc cag gat act cta tat gtg ctt ccc agt Ser Ser Pro Arg Lys Thr Ala Gln Asp Thr Leu Tyr Val Leu Pro Ser 695 700 705	2227
ccc acc tct cca tgt cct agc cca gtc ttg gtc aga aag cgg gct ttt Pro Thr Ser Pro Cys Pro Ser Pro Val Leu Val Arg Lys Arg Ala Phe 710 715 720	2275
gtc aag tgg gag aat aaa gac tcc ctc ata aaa tca aag gag gag ctc	2323

- 25 -

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Met Met Val	Ser Leu Gly His Leu Ala Lys	Gly Ala Ser Leu	Asp Asp
	50	55	60
Leu Ile Asp	Ser Cys Ile Gln Ser Phe Asp	Ala Asp Gly Asn	Leu Cys
	65	70	75
Arg Ser Asn	Gln Leu Leu Gln Val Met	Leu Thr Met His Arg	Ile Val
	85	90	95
Ile Ser Ser	Ala Glu Leu Leu Gln Lys	Val Ile Thr Leu Tyr	Lys Asp
	100	105	110
Ala Leu Ala	Lys Asn Ser Pro Gly Leu Cys	Leu Lys Ile Cys Tyr	Phe
	115	120	125
Val Arg Tyr	Trp Ile Thr Glu Phe Trp	Val Met Phe Lys	Met Asp Ala
	130	135	140
Ser Leu Thr	Asp Thr Met Glu Glu Phe Gln	Glu Leu Val Lys	Ala Lys
	145	150	155
Gly Glu Glu	Leu His Cys Arg Leu Ile Asp	Thr Thr Gln Ile	Asn Ala
	165	170	175
Arg Asp Trp	Ser Arg Lys Leu Thr Gln Arg	Ile Lys Ser Asn	Thr Ser
	180	185	190
Lys Lys Arg	Lys Val Ser Leu Leu Phe Asp	His Leu Glu Pro	Glu Glu
	195	200	205
Leu Ser Glu	His Leu Thr Tyr Leu Glu Phe	Lys Ser Phe Arg	Arg Ile
	210	215	220
Ser Phe Ser	Asp Tyr Gln Asn Tyr Leu Val	Asn Ser Cys Val	Lys Glu
	225	230	235
			240

Asn Pro Thr Met Glu Arg Ser Ile Ala Leu Cys Asn Gly Ile Ser Gln
 245 250 255

Trp Val Gln Leu Met Val Leu Ser Arg Pro Thr Pro Gln Leu Arg Ala
 260 265 270

Glu Val Phe Ile Lys Phe Ile Gln Val Ala Gln Lys Leu His Gln Leu
 275 280 285

Gln Asn Phe Asn Thr Leu Met Ala Val Ile Gly Gly Leu Cys His Ser
 290 295 300

Ser Ile Ser Arg Leu Lys Glu Thr Ser Ser His Val Pro His Glu Ile
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Asn Lys Val Leu Gly Glu Met Thr Glu Leu Leu Ser Ser Ser Arg Asn
 325 330 335

Tyr Asp Asn Tyr Arg Arg Ala Tyr Gly Glu Cys Thr Asp Phe Lys Ile
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Pro Ile Leu Gly Val His Leu Lys Asp Leu Ile Ser Leu Tyr Glu Ala
 355 360 365

Met Pro Asp Tyr Leu Gly Asp Gly Lys Val Asn Val His Lys Leu Leu
 370 375 380

Ala Leu Tyr Asn His Ile Ser Glu Leu Val Gln Leu Gln Glu Val Ala
 385 390 395 400

Pro Pro Leu Glu Ala Asn Lys Asp Leu Val His Leu Leu Thr Leu Ser
 405 410 415

Leu Asp Leu Tyr Tyr Thr Glu Asp Glu Ile Tyr Glu Leu Ser Tyr Ala
 420 425 430

Arg Glu Pro Arg Asn His Arg Ala Pro Pro Leu Thr Pro Ser Lys Pro
 435 440 445

Pro Val Val Val Asp Trp Ala Ser Gly Val Ser Pro Lys Pro Asp Pro
 450 455 460

Lys Thr Ile Ser Lys His Val Gln Arg Met Val Asp Ser Val Phe Lys
 465 470 475 480

Asn Tyr Asp His Asp Gln Asp Gly Tyr Ile Ser Gln Glu Glu Phe Glu
 485 490 495

Lys Ile Ala Ala Ser Phe Pro Phe Ser Phe Cys Val Met Asp Lys Asp
 500 505 510

Arg Glu Gly Leu Ile Ser Arg Asp Glu Ile Thr Ala Tyr Phe Met Arg
 515 520 525

Ala Ser Ser Ile Tyr Ser Lys Leu Gly Leu Gly Phe Pro His Asn Phe
 530 535 540

Gln Glu Thr Thr Tyr Leu Lys Pro Thr Phe Cys Asp Asn Cys Ala Gly
 545 550 555 560

Phe Leu Trp Gly Val Ile Lys Gln Gly Tyr Arg Cys Lys Asp Cys Gly
 565 570 575

Met Asn Cys His Lys Gln Cys Lys Asp Leu Val Val Phe Glu Cys Lys
 580 585 590

Lys Arg Ala Lys Asn Pro Val Ala Pro Thr Glu Asn Asn Thr Ser Val
 595 600 605

Gly Pro Val Ser Asn Leu Cys Ser Leu Gly Ala Lys Asp Leu Leu His
 610 615 620

Ala Pro Glu Glu Gly Pro Phe Thr Phe Pro Asn Gly Glu Ala Val Glu
 625 630 635 640

His Gly Glu Glu Ser Lys Asp Arg Thr Ile Met Leu Met Gly Val Ser
 645 650 655

Ser Gln Lys Ile Ser Leu Arg Leu Lys Arg Ala Val Ala His Lys Ala
 660 665 670

Thr Gln Thr Glu Ser Gln Pro Trp Ile Gly Ser Glu Gly Pro Ser Gly
 675 680 685

Pro Phe Val Leu Ser Ser Pro Arg Lys Thr Ala Gln Asp Thr Leu Tyr
690 695 700

Val Leu Pro Ser Pro Thr Ser Pro Cys Pro Ser Pro Val Leu Val Arg
705 710 715 720

Lys Arg Ala Phe Val Lys Trp Glu Asn Lys Asp Ser Leu Ile Lys Ser
725 730 735

Lys Glu Glu Leu Arg His Leu Arg Leu Pro Thr Tyr Gln Glu Leu Glu
740 745 750

Gln Glu Ile Asn Thr Leu Lys Ala Asp Asn Asp Ala Leu Lys Ile Gln
755 760 765

Leu Lys Tyr Ala Gln Lys Lys Ile Glu Ser Leu Gln Leu Glu Lys Ser
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ggtggagagt ccagctgtgg gggcaccgca ggtgcgaggt ctcccggacg tggttccgga 180
gggcacgctg ctcaat atg gtg ctg aag aga atg cac cgt ccc cgg tgc tgc 232
Met Val Leu Lys Arg Met His Arg Pro Arg Cys Cys
1 5 10
tct tac cag cta gtg ttc gag cac cgg cgc cca agc tgc atc cag gga 280
Ser Tyr Gln Leu Val Phe Glu His Arg Arg Pro Ser Cys Ile Gln Gly
15 20 25
ctt cgc tgg acg cca ctt acc aac agt gag ggc tcc ctg gac ttc aga 328
Leu Arg Trp Thr Pro Leu Thr Asn Ser Glu Gly Ser Leu Asp Phe Arg
30 35 40

gtg agc ctg gag cag gcc acc aca gag cat gtg cac aag gcc ggg aag Val Ser Leu Glu Gln Ala Thr Thr Glu His Val His Lys Ala Gly Lys 45 50 55 60	376
ctc ctg tac cgt cat ctc ttg gca acg tac cct acc ctc atc cga gac Leu Leu Tyr Arg His Leu Leu Ala Thr Tyr Pro Thr Leu Ile Arg Asp 65 70 75	424
aga aaa tac cat ctg cga cta cat cgg cag tgc tgc tct ggc cgg gag Arg Lys Tyr His Leu Arg Leu His Arg Gln Cys Cys Ser Gly Arg Glu 80 85 90	472
cta gtg gat ggg atc ttg gct ctg ggt ctt ggg gtc cac tca cgg agc Leu Val Asp Gly Ile Leu Ala Leu Gly Leu Gly Val His Ser Arg Ser 95 100 105	520
caa gct gtg ggc atc tgc cag gtg ttg ctg gat gag ggt gcc ctt tgc Gln Ala Val Gly Ile Cys Gln Val Leu Leu Asp Glu Gly Ala Leu Cys 110 115 120	568
cat gta aaa cat gac tgg acc ttc cag gac cga gac gcc caa ttc tac His Val Lys His Asp Trp Thr Phe Gln Asp Arg Asp Ala Gln Phe Tyr 125 130 135 140	616
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gag gag ctt gtt gag gca atg gcc cta ctc tcc cag cga ggg cct gat Glu Glu Leu Val Glu Ala Met Ala Leu Leu Ser Gln Arg Gly Pro Asp 160 165 170	712
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acc cgt ggc aag ggg ctg gtg acc acg ttg cac gag gga gat gac ttt Thr Arg Gly Lys Gly Leu Val Thr Thr Leu His Glu Gly Asp Asp Phe 255 260 265	1000
gga cag ctg gct ctg gtg aac gac gca cct cga gca gcc acc atc atc	1048

Gly	Gln	Leu	Ala	Leu	Val	Asn	Asp	Ala	Pro	Arg	Ala	Ala	Thr	Ile	Ile		
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ctt	cga	gaa	aat	aac	tgt	cac	ttt	ctg	cgt	gtg	gac	aag	cag	gac	ttc	1096	
Leu	Arg	Glu	Asn	Asn	Cys	His	Phe	Leu	Arg	Val	Asp	Lys	Gln	Asp	Phe		
285					290				295						300		
aac	cgc	atc	atc	aag	gat	gtg	gaa	gca	aaa	acc	atg	aga	ctg	gaa	gaa	1144	
Asn	Arg	Ile	Ile	Lys	Asp	Val	Glu	Ala	Lys	Thr	Met	Arg	Leu	Glu	Glu		
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cac	ggc	aaa	gtg	gtg	tta	gtt	ttg	gag	aga	acc	tct	cag	ggg	gct	ggc	1192	
His	Gly	Lys	Val	Val	Leu	Val	Leu	Glu	Arg	Thr	Ser	Gln	Gly	Ala	Gly		
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cct	tcc	cgc	cct	ccg	acc	cca	ggc	agg	aac	cga	tat	acg	gta	atg	tct	1240	
Pro	Ser	Arg	Pro	Pro	Thr	Pro	Gly	Arg	Asn	Arg	Tyr	Thr	Val	Met	Ser		
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ggc	acc	cca	gag	aaa	atc	cta	gaa	ctc	ctg	ttg	gag	gct	atg	aga	ccg	1288	
Gly	Thr	Pro	Glu	Lys	Ile	Leu	Glu	Leu	Leu	Leu	Glu	Ala	Met	Arg	Pro		
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gat	tcc	agt	gct	cat	gac	cca	aca	gag	aca	ttc	ctc	agt	gac	ttc	ctg	1336	
Asp	Ser	Ser	Ala	His	Asp	Pro	Thr	Glu	Thr	Phe	Leu	Ser	Asp	Phe	Leu		
365					370					375					380		
ctg	acg	cac	agt	gtc	ttc	atg	ccc	tgc	aca	cag	ctc	ttt	gcc	gcc	ctc	1384	
Leu	Thr	His	Ser	Val	Phe	Met	Pro	Cys	Thr	Gln	Leu	Phe	Ala	Ala	Leu		
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ctg	cac	cac	ttc	cac	gtg	gag	cca	tca	gag	cct	gcc	ggg	ggc	agc	gag	1432	
Leu	His	His	Phe	His	Val	Glu	Pro	Ser	Glu	Pro	Ala	Gly	Gly	Ser	Glu		
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Gln	Glu	Arg	Ser	Thr	Tyr	Ile	Cys	Asn	Lys	Arg	Gln	Gln	Ile	Leu	Arg		
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ctg	gtc	agc	cgg	tgg	gtg	gcc	ctc	tac	agc	ccc	atg	ctc	cgc	tca	gat	1528	
Leu	Val	Ser	Arg	Trp	Val	Ala	Leu	Tyr	Ser	Pro	Met	Leu	Arg	Ser	Asp		
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Pro	Val	Ala	Thr	Ser	Phe	Leu	Gln	Lys	Leu	Ser	Asp	Leu	Val	Ser	Arg		
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gat	acc	cga	ctt	agc	aac	ttg	ctg	agg	gaa	cag	tat	ccg	gag	aga	cgg	1624	
Asp	Thr	Arg	Leu	Ser	Asn	Leu	Leu	Arg	Glu	Gln	Tyr	Pro	Glu	Arg	Arg		
				465				470						475			
cga	cac	cac	agg	ttg	gag	aat	ggc	tgt	ggg	aat	gta	tct	cct	cag	acc	1672	
Arg	His	His	Arg	Leu	Glu	Asn	Gly	Cys	Gly	Asn	Val	Ser	Pro	Gln	Thr		
			480				485						490				
aag	gcc	cgg	aat	gca	cct	gtt	tgg	ttt	cct	aac	cat	gag	gaa	ccc	ctc	1720	
Lys	Ala	Arg	Asn	Ala	Pro	Val	Trp	Phe	Pro	Asn	His	Glu	Glu	Pro	Leu		

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ggc ttg cag cca gat gcc cgc ggt gtg gcc aca tcc ctg ggg ctc aat Gly Leu Gln Pro Asp Ala Arg Gly Val Ala Thr Ser Leu Gly Leu Asn 575 580 585			1960
gag cgg atc ttt gtt gtc gac cca cag gaa gtg cac gag ctg acc cca Glu Arg Ile Phe Val Val Asp Pro Gln Glu Val His Glu Leu Thr Pro 590 595 600			2008
cac cct gag cag ctg ggg ccc act ctg ggt tct tct gag atg ctg gac His Pro Glu Gln Leu Gly Pro Thr Leu Gly Ser Ser Glu Met Leu Asp 605 610 615 620			2056
cta gtg agt gcc aag gac ctg gca ggc cag ctc aca gag cat gac tgg Leu Val Ser Ala Lys Asp Leu Ala Gly Gln Leu Thr Glu His Asp Trp 625 630 635			2104
aac ctc ttc aac agg atc cac cag gtg gag ctg atc cac tat gta ctg Asn Leu Phe Asn Arg Ile His Gln Val Glu Leu Ile His Tyr Val Leu 640 645 650			2152
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gcg gtc atg ttt ggc ctc agc aac tcg gcc atc agc cgc ctg gcc cac Ala Val Met Phe Gly Leu Ser Asn Ser Ala Ile Ser Arg Leu Ala His 720 725 730			2392

acc tgg gag cgt ctg ccc cat aaa gta cgg aag ctg tac tcg gcc ctg Thr Trp Glu Arg Leu Pro His Lys Val Arg Lys Leu Tyr Ser Ala Leu 735 740 745	2440
gaa agg ttg ctg gac cct tcc tgg aac cac cga gtg tac cga ttg gct Glu Arg Leu Leu Asp Pro Ser Trp Asn His Arg Val Tyr Arg Leu Ala 750 755 760	2488
ctc acc aag ctc tct cct cct gtc atc cct ttc atg ccc ctg cta ctc Leu Thr Lys Leu Ser Pro Pro Val Ile Pro Phe Met Pro Leu Leu Leu 765 770 775 780	2536
aaa gac atg acc ttc att cat gaa ggg aac cac aca ctg gta gaa aac Lys Asp Met Thr Phe Ile His Glu Gly Asn His Thr Leu Val Glu Asn 785 790 795	2584
ctc atc aac ttt gag aag atg cga atg atg gcc aga gcc gtg cgg atg Leu Ile Asn Phe Glu Lys Met Arg Met Met Ala Arg Ala Val Arg Met 800 805 810	2632
ctc cac cac tgc cga agc cac agc acc gcg cct cta tca cca ctc aga Leu His His Cys Arg Ser His Ser Thr Ala Pro Leu Ser Pro Leu Arg 815 820 825	2680
agc cgg gtt tcc cac atc cac gag gac agc cag gca tca aga atc tcc Ser Arg Val Ser His Ile His Glu Asp Ser Gln Ala Ser Arg Ile Ser 830 835 840	2728
aca tgt tcc gag cag tcc ctg agc acc cgg agt cca gcc agc acc tgg Thr Cys Ser Glu Gln Ser Leu Ser Thr Arg Ser Pro Ala Ser Thr Trp 845 850 855 860	2776
gct tat gtc cag cag ctg aag gtc att gac aac cag cgg gaa ctg tcc Ala Tyr Val Gln Gln Leu Lys Val Ile Asp Asn Gln Arg Glu Leu Ser 865 870 875	2824
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3373

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35 40 45

Gln Ala Thr Thr Glu His Val His Lys Ala Gly Lys Leu Leu Tyr Arg
50 55 60

His Leu Leu Ala Thr Tyr Pro Thr Leu Ile Arg Asp Arg Lys Tyr His
65 70 75 80

Leu Arg Leu His Arg Gln Cys Cys Ser Gly Arg Glu Leu Val Asp Gly
85 90 95

Ile Leu Ala Leu Gly Leu Gly Val His Ser Arg Ser Gln Ala Val Gly
100 105 110

Ile Cys Gln Val Leu Leu Asp Glu Gly Ala Leu Cys His Val Lys His
115 120 125

Asp Trp Thr Phe Gln Asp Arg Asp Ala Gln Phe Tyr Arg Phe Pro Gly
130 135 140

Pro Glu Pro Gln Pro Ala Gly Thr His Asp Val Glu Glu Glu Leu Val
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Glu Ala Met Ala Leu Leu Ser Gln Arg Gly Pro Asp Ala Leu Leu Thr
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Val Ala Leu Arg Lys Ser Pro Gly Gln Arg Thr Asp Glu Glu Leu Asp
180 185 190

Leu Ile Phe Glu Glu Leu Val His Ile Lys Ala Val Ala His Leu Ser
 195 200 205

Asn Ser Val Lys Arg Glu Leu Ala Ala Val Leu Leu Phe Glu Pro His
 210 215 220

Ser Lys Ala Gly Thr Val Leu Phe Ser Gln Gly Asp Lys Gly Thr Ser
 225 230 235 240

Trp Tyr Ile Ile Trp Lys Gly Ser Val Asn Val Val Thr Arg Gly Lys
 245 250 255

Gly Leu Val Thr Thr Leu His Glu Gly Asp Asp Phe Gly Gln Leu Ala
 260 265 270

Leu Val Asn Asp Ala Pro Arg Ala Ala Thr Ile Ile Leu Arg Glu Asn
 275 280 285

Asn Cys His Phe Leu Arg Val Asp Lys Gln Asp Phe Asn Arg Ile Ile
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Lys Asp Val Glu Ala Lys Thr Met Arg Leu Glu Glu His Gly Lys Val
 305 310 315 320

Val Leu Val Leu Glu Arg Thr Ser Gln Gly Ala Gly Pro Ser Arg Pro
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Pro Thr Pro Gly Arg Asn Arg Tyr Thr Val Met Ser Gly Thr Pro Glu
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Lys Ile Leu Glu Leu Leu Leu Glu Ala Met Arg Pro Asp Ser Ser Ala
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His Asp Pro Thr Glu Thr Phe Leu Ser Asp Phe Leu Leu Thr His Ser
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Val Phe Met Pro Cys Thr Gln Leu Phe Ala Ala Leu Leu His His Phe
 385 390 395 400

His Val Glu Pro Ser Glu Pro Ala Gly Gly Ser Glu Gln Glu Arg Ser
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Thr Tyr Ile Cys Asn Lys Arg Gln Gln Ile Leu Arg Leu Val Ser Arg
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Trp Val Ala Leu Tyr Ser Pro Met Leu Arg Ser Asp Pro Val Ala Thr
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Ser Phe Leu Gln Lys Leu Ser Asp Leu Val Ser Arg Asp Thr Arg Leu
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Ser Asn Leu Leu Arg Glu Gln Tyr Pro Glu Arg Arg Arg His His Arg
465 470 475 480

Leu Glu Asn Gly Cys Gly Asn Val Ser Pro Gln Thr Lys Ala Arg Asn
485 490 495

Ala Pro Val Trp Phe Pro Asn His Glu Glu Pro Leu Pro Ser Ser Ala
500 505 510

Gly Ala Ile Arg Val Gly Asp Lys Val Pro Tyr Asp Ile Cys Arg Pro
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Asp His Ser Val Leu Thr Leu His Leu Pro Val Thr Ala Ser Val Arg
530 535 540

Glu Val Met Ala Ala Leu Ala His Glu Asp His Trp Thr Lys Gly Gln
545 550 555 560

Val Leu Val Lys Val Asn Ser Ala Gly Asp Val Val Gly Leu Gln Pro
565 570 575

Asp Ala Arg Gly Val Ala Thr Ser Leu Gly Leu Asn Glu Arg Ile Phe
580 585 590

Val Val Asp Pro Gln Glu Val His Glu Leu Thr Pro His Pro Glu Gln
595 600 605

Leu Gly Pro Thr Leu Gly Ser Ser Glu Met Leu Asp Leu Val Ser Ala
610 615 620

Lys Asp Leu Ala Gly Gln Leu Thr Glu His Asp Trp Asn Leu Phe Asn
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Arg Ile His Gln Val Glu Leu Ile His Tyr Val Leu Gly Pro Gln His

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Pro Gly Pro Arg Ala Gln Leu Leu Arg Lys Phe Ile Lys Leu Ala Ala 690 695 700		
His Leu Lys Glu Gln Lys Asn Leu Asn Ser Phe Phe Ala Val Met Phe 705 710 715 720		
Gly Leu Ser Asn Ser Ala Ile Ser Arg Leu Ala His Thr Trp Glu Arg 725 730 735		
Leu Pro His Lys Val Arg Lys Leu Tyr Ser Ala Leu Glu Arg Leu Leu 740 745 750		
Asp Pro Ser Trp Asn His Arg Val Tyr Arg Leu Ala Leu Thr Lys Leu 755 760 765		
Ser Pro Pro Val Ile Pro Phe Met Pro Leu Leu Leu Lys Asp Met Thr 770 775 780		
Phe Ile His Glu Gly Asn His Thr Leu Val Glu Asn Leu Ile Asn Phe 785 790 795 800		
Glu Lys Met Arg Met Met Ala Arg Ala Val Arg Met Leu His His Cys 805 810 815		
Arg Ser His Ser Thr Ala Pro Leu Ser Pro Leu Arg Ser Arg Val Ser 820 825 830		
His Ile His Glu Asp Ser Gln Ala Ser Arg Ile Ser Thr Cys Ser Glu 835 840 845		
Gln Ser Leu Ser Thr Arg Ser Pro Ala Ser Thr Trp Ala Tyr Val Gln 850 855 860		
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tcc cag cgg ggg cct gac gcc ctg ctc act gtg gca ctt cga aag ccc Ser Gln Arg Gly Pro Asp Ala Leu Leu Thr Val Ala Leu Arg Lys Pro 170 175 180			761
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Gln Ala Ser Thr Glu Arg Val Leu Arg Ala Gly Arg Gln Leu His Gln
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His Leu Leu Ala Thr Cys Pro Asn Leu Ile Arg Asp Arg Lys Tyr His
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Leu Arg Leu Tyr Arg Gln Cys Cys Ser Gly Arg Glu Leu Val Asp Gly
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Ile Leu Ala Leu Gly Leu Gly Val His Ser Arg Ser Gln Val Val Gly
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Ile Cys Gln Val Leu Leu Asp Glu Gly Ala Leu Cys His Val Lys His
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Asp Trp Ala Phe Gln Asp Arg Asp Ala Gln Phe Tyr Arg Phe Pro Gly
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Pro Glu Pro Glu Pro Val Gly Thr His Glu Met Glu Glu Glu Leu Ala
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Glu Ala Val Ala Leu Leu Ser Gln Arg Gly Pro Asp Ala Leu Leu Thr
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Val Ala Leu Arg Lys Pro Pro Gly Gln Arg Thr Asp Glu Glu Leu Asp
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Leu Ile Phe Glu Glu Leu Leu His Ile Lys Ala Val Ala His Leu Ser
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Asn Ser Val Lys Arg Glu Leu Ala Ala Val Leu Leu Phe Glu Pro His
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Ser Lys Ala Gly Thr Val Leu Phe Ser Gln Gly Asp Lys Gly Thr Ser
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Trp Tyr Ile Ile Trp Lys Gly Ser Val Asn Val Val Thr His Gly Lys
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Gly Leu Val Thr Thr Leu His Glu Gly Asp Asp Phe Gly Gln Leu Ala
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Val Leu Val Leu Glu Arg Ala Ser Gln Gly Ala Gly Pro Ser Arg Pro				
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Pro Thr Pro Gly Arg Asn Arg Tyr Thr Val Met Ser Gly Thr Pro Asp				
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Lys Ile Leu Glu Leu Leu Leu Glu Ala Met Gly Leu Asp Ser Ser Ala				
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His Asp Pro Lys Glu Thr Phe Leu Ser Asp Phe Leu Leu Thr His Arg				
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Val Phe Met Pro Ser Ala Gln Leu Cys Ala Ala Leu Leu His His Phe				
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His Val Glu Pro Ala Gly Gly Ser Glu Gln Glu Arg Ser Thr Tyr Val				
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Cys Asn Lys Arg Gln Gln Ile Leu Arg Leu Val Ser Gln Trp Val Ala				
		420		425
Leu Tyr Gly Ser Met Leu His Thr Asp Pro Val Ala Thr Ser Phe Leu				
		435		440
His Lys Leu Ser Asp Leu Val Gly Arg Asp Thr Arg Leu Ser Asn Leu				
		450		455
Leu Arg Glu Gln Trp Pro Glu Arg Arg Arg Cys His Arg Leu Glu Asn				
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Gly Cys Gly Asn Ala Ser Pro Gln Met Lys Ala Arg Asn Leu Pro Val				
		485		490
Trp Leu Pro Asn Gln Asp Glu Pro Leu Pro Gly Ser Ser Cys Ala Ile				
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Gln Val Gly Asp Lys Val Pro Tyr Asp Ile Cys Arg Pro Asp His Ser
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Val Leu Thr Leu Gln Leu Pro Val Thr Ala Ser Val Arg Glu Val Met
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Lys Val Asn Ser Ala Gly Asp Ala Ile Gly Leu Gln Pro Asp Ala Arg
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Gly Val Ala Thr Ser Leu Gly Leu Asn Glu Arg Leu Phe Val Val Asn
580 585 590

Pro Gln Glu Val His Glu Leu Ile Pro His Pro Asp Gln Leu Gly Pro
595 600 605

Thr Val Gly Ser Ala Glu Gly Leu Asp Leu Val Ser Ala Lys Asp Leu
610 615 620

Ala Gly Gln Leu Thr Asp His Asp Trp Ser Leu Phe Asn Ser Ile His
625 630 635 640

Gln Val Glu Leu Ile His Tyr Val Leu Gly Pro Gln His Leu Arg Asp
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Val Thr Thr Ala Asn Leu Glu Arg Phe Met Arg Arg Phe Asn Glu Leu
660 665 670

Gln Tyr Trp Val Ala Thr Glu Leu Cys Leu Cys Pro Val Pro Gly Pro
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Arg Ala Gln Leu Leu Lys Lys Phe Ile Lys Leu Ala Ala His Leu Lys
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Glu Gln Lys Asn Val Asn Ser Phe Phe Ala Val Met Phe Gly Leu Ser
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Asn Ser Pro Ile Ser Arg Leu Ala His Thr Trp Glu Arg Leu Pro His
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Lys Val Arg Lys Leu Tyr Ser Ala Leu Glu Arg Leu Leu Asp Pro Ser
740 745 750

Trp Asn His Arg Val Tyr Arg Leu Ala Leu Ala Lys Leu Ser Pro Pro
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Val Ile Pro Phe Met Pro Leu Leu Leu Lys Asp Met Thr Phe Ile His
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Glu Gly Asn His Thr Leu Val Glu Asn Leu Ile Asn Phe Glu Lys Met
785 790 795 800

Arg Met Met Ala Arg Ala Ala Arg Met Leu His His Cys Arg Ser His
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Asn Pro Val Pro Leu Ser Pro Leu Arg Ser Arg Val Ser His Leu His
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Ser Thr Arg Ser Pro Ala Ser Thr Trp Ala Tyr Val Gln Gln Leu Lys
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Met Val Leu Arg Arg Met	
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His Arg Pro Arg Ser Cys Ser Tyr Gln Leu Leu Leu Glu His Gln His	
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Pro Ser Cys Ile Gln Gly Leu Arg Trp Thr Pro Leu Thr Asn Ser Glu	
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Glu Ser Leu Asp Phe Ser Glu Ser Leu Glu Gln Ala Ser Thr Glu Arg	
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Val Leu Arg Ala Gly Arg Gln Leu His Gln His Leu Leu Ala Thr Cys	
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 <212> PRT
 <213> Homo sapiens

<400> 14

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Pro Leu Thr Asn Ser Glu Glu Ser Leu Asp Phe Ser Glu Ser Leu Glu	35	40	45
Gln Ala Ser Thr Glu Arg Val Leu Arg Ala Gly Arg Gln Leu His Gln	50	55	60
His Leu Leu Ala Thr Cys Pro Asn Leu Ile Arg Asp Arg Lys Tyr His	65	70	75
Leu Arg Leu Tyr Arg Gln Cys Cys Ser Gly Arg Glu Leu Val Asp Gly	85	90	95
Ile Leu Ala Leu Gly Leu Gly Val His Ser Arg Ser Gln Val Val Gly	100	105	110
Ile Cys Gln Val Leu Leu Asp Glu Gly Ala Leu Cys His Val Lys His	115	120	125
Asp Trp Ala Phe Gln Asp Arg Asp Ala Gln Phe Tyr Arg Phe Pro Gly	130	135	140
Pro Glu Pro Glu Pro Val Gly Thr His Glu Met Glu Glu Glu Leu Ala	145	150	155
Glu Ala Val Ala Leu Leu Ser Gln Arg Gly Pro Asp Ala Leu Leu Thr	165	170	175
Val Ala Leu Arg Lys Pro Pro Gly Gln Arg Thr Asp Glu Glu Leu Asp	180	185	190
Leu Ile Phe Glu Glu Leu Leu His Ile Lys Ala Val Ala His Leu Ser	195	200	205
Asn Ser Val Lys Arg Glu Leu Ala Ala Val Leu Leu Phe Glu Pro His	210	215	220
Ser Lys Ala Gly Thr Val Leu Phe Ser Gln Gly Asp Lys Gly Thr Ser	225	230	235
			240

Trp Tyr Ile Ile Trp Lys Gly Ser Val Asn Val Val Thr His Gly Lys
 245 250 255

Gly Leu Val Thr Thr Leu His Glu Gly Asp Asp Phe Gly Gln Leu Ala
 260 265 270

Leu Val Asn Asp Ala Pro Arg Ala Ala Thr Ile Ile Leu Arg Glu Tyr
 275 280 285

Asn Cys His Phe Leu Arg Val Asp Lys Gln Asp Phe Asn Arg Ile Ile
 290 295 300

Lys Asp Val Glu Ala Lys Thr Met Arg Leu Glu Glu His Gly Lys Val
 305 310 315 320

Val Leu Val Leu Glu Arg Ala Ser Gln Gly Ala Gly Pro Ser Arg Pro
 325 330 335

Pro Thr Pro Gly Arg Asn Arg Tyr Thr Val Met Ser Gly Thr Pro Asp
 340 345 350

Lys Ile Leu Glu Leu Leu Leu Glu Ala Met Gly Leu Asp Ser Ser Ala
 355 360 365

His Asp Pro Lys Glu Thr Phe Leu Ser Asp Phe Leu Leu Thr His Arg
 370 375 380

Val Phe Met Pro Ser Ala Gln Leu Cys Ala Ala Leu Leu His His Phe
 385 390 395 400

His Val Glu Pro Ala Gly Gly Ser Glu Gln Glu Arg Ser Thr Tyr Val
 405 410 415

Cys Asn Lys Arg Gln Gln Ile Leu Arg Leu Val Ser Gln Trp Val Ala
 420 425 430

Leu Tyr Gly Ser Met Leu His Thr Asp Pro Val Ala Thr Ser Phe Leu
 435 440 445

Gln Lys Leu Ser Asp Leu Val Gly Arg Asp Thr Arg Leu Ser Asn Leu
 450 455 460

Leu Arg Glu Gln Trp Pro Glu Arg Arg Arg Cys His Arg Leu Glu Asn
465 470 475 480

Gly Cys Gly Asn Ala Ser Pro Gln Met Lys Val Ser Ala Trp Pro Gln
485 490 495

Phe Leu Ser Ser Ala Pro Pro Gly Leu Gln Ala Pro Pro Ser Pro Pro
500 505 510

Asp Pro Glu Gly Leu Cys Gly Arg Gly Lys Leu Ser Ser His Arg His
515 520 525

Thr Leu Gly Ser Leu Ile Gly Val His Gly Ala Leu Ala Ala Cys Gly
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Ala Leu Gly Gln Ala Val Pro Gly Gly Ala Glu Ala
545 550 555

<210> 15
<211> 1966
<212> DNA
<213> Rattus norvegicus

<220>
<221> CDS
<222> (3)..(875)

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Ile Asn Gly Arg Leu Phe Ala Cys Pro Arg Glu Gln Phe Asp Ser Leu
20 25 30

act ccc ttg cca gaa cag gag ggc ccg acc act ggg aca gtg ggg acg 143
Thr Pro Leu Pro Glu Gln Glu Gly Pro Thr Thr Gly Thr Val Gly Thr
35 40 45

ttt gaa ctg atg agc tcg aaa gac ttg gcg tac cag atg aca acg tat 191
Phe Glu Leu Met Ser Ser Lys Asp Leu Ala Tyr Gln Met Thr Thr Tyr
50 55 60

gac tgg gaa ctc ttc aac tgt gtg ctc gag ctg gag cta atc tac cac 239
Asp Trp Glu Leu Phe Asn Cys Val Leu Glu Leu Glu Leu Ile Tyr His
65 70 75

aca ttt gga agg cat aat ttt aaa aag acc aca gca aac ttg gat ttg 287

Thr	Phe	Gly	Arg	His	Asn	Phe	Lys	Lys	Thr	Thr	Ala	Asn	Leu	Asp	Leu	
80					85					90					95	
ttc	ctg	agg	aga	ttt	aat	gaa	att	cag	ttt	tgg	gtt	gtc	act	gag	atc	335
Phe	Leu	Arg	Arg	Phe	Asn	Glu	Ile	Gln	Phe	Trp	Val	Val	Thr	Glu	Ile	
				100				105						110		
tgc	ctt	tgt	tcc	cag	ctc	agc	aag	cgt	gtt	cag	ctt	ttg	aaa	aaa	tgt	383
Cys	Leu	Cys	Ser	Gln	Leu	Ser	Lys	Arg	Val	Gln	Leu	Leu	Lys	Lys	Cys	
			115					120					125			
atc	aag	ata	gcg	gct	cac	tgc	aag	gag	tac	aaa	aac	ttg	aat	tcc	ttc	431
Ile	Lys	Ile	Ala	Ala	His	Cys	Lys	Glu	Tyr	Lys	Asn	Leu	Asn	Ser	Phe	
		130					135					140				
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Phe	Gly	Ile	Val	Met	Gly	Leu	Ser	Asn	Val	Ala	Glu	Ser	Arg	Leu	Ala	
	145					150					155					
tta	aca	tgg	gag	aaa	ctg	ccg	agc	aag	ttt	aag	aag	ttc	tat	gcg	gag	527
Leu	Thr	Trp	Glu	Lys	Leu	Pro	Ser	Lys	Phe	Lys	Lys	Phe	Tyr	Ala	Glu	
160					165					170					175	
ttt	gag	agc	tta	atg	gat	cct	tcc	aga	aat	cac	aag	gcg	tac	agg	ctg	575
Phe	Glu	Ser	Leu	Met	Asp	Pro	Ser	Arg	Asn	His	Lys	Ala	Tyr	Arg	Leu	
				180					185					190		
aca	gca	gct	aaa	ctg	gag	ccc	ccc	ctc	atc	cct	ttc	atg	ccc	ttg	ctt	623
Thr	Ala	Ala	Lys	Leu	Glu	Pro	Pro	Leu	Ile	Pro	Phe	Met	Pro	Leu	Leu	
			195					200					205			
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Ile	Lys	Asp	Met	Thr	Phe	Thr	His	Glu	Gly	Asn	Lys	Thr	Phe	Ile	Asp	
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Asn	Leu	Val	Asn	Phe	Glu	Lys	Met	Arg	Met	Ile	Ala	Asn	Thr	Ala	Arg	
	225					230					235					
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Thr	Val	Arg	Tyr	Tyr	Arg	Ser	Gln	Pro	Phe	Asn	Pro	Asp	Ala	Ala	Gln	
240					245					250					255	
gct	aat	aag	aac	cat	cag	gat	gtc	cgg	agt	tat	gta	cgg	caa	tta	aat	815
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				260				265						270		
gtg	att	gac	aac	cag	aga	act	tta	tca	cag	atg	tca	cac	aga	tta	gag	863
Val	Ile	Asp	Asn	Gln	Arg	Thr	Leu	Ser	Gln	Met	Ser	His	Arg	Leu	Glu	
			275					280					285			
cct	cgc	agg	cca	tagacatctg	cagtgccag	agtgatgctc	cgtctccagt									915
Pro	Arg	Arg	Pro													
			290													
ccacaatctt	tcaaaagatg	ctgtgtatgc	tactactgac	tgtgttgcta	ctagagaatt											975

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<212> PRT
<213> Rattus norvegicus

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<400> 16

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Asn Gly Arg Leu Phe Ala Cys Pro Arg Glu Gln Phe Asp Ser Leu Thr
20           25           30

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Pro Leu Pro Glu Gln Glu Gly Pro Thr Thr Gly Thr Val Gly Thr Phe
35           40           45

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Glu Leu Met Ser Ser Lys Asp Leu Ala Tyr Gln Met Thr Thr Tyr Asp
50           55           60

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Trp	Glu	Leu	Phe	Asn	Cys	Val	Leu	Glu	Leu	Glu	Leu	Ile	Tyr	His	Thr	65	70	75	80
Phe	Gly	Arg	His	Asn	Phe	Lys	Lys	Thr	Thr	Ala	Asn	Leu	Asp	Leu	Phe	85	90	95	
Leu	Arg	Arg	Phe	Asn	Glu	Ile	Gln	Phe	Trp	Val	Val	Thr	Glu	Ile	Cys	100	105	110	
Leu	Cys	Ser	Gln	Leu	Ser	Lys	Arg	Val	Gln	Leu	Leu	Lys	Lys	Cys	Ile	115	120	125	
Lys	Ile	Ala	Ala	His	Cys	Lys	Glu	Tyr	Lys	Asn	Leu	Asn	Ser	Phe	Phe	130	135	140	
Gly	Ile	Val	Met	Gly	Leu	Ser	Asn	Val	Ala	Glu	Ser	Arg	Leu	Ala	Leu	145	150	155	160
Thr	Trp	Glu	Lys	Leu	Pro	Ser	Lys	Phe	Lys	Lys	Phe	Tyr	Ala	Glu	Phe	165	170	175	
Glu	Ser	Leu	Met	Asp	Pro	Ser	Arg	Asn	His	Lys	Ala	Tyr	Arg	Leu	Thr	180	185	190	
Ala	Ala	Lys	Leu	Glu	Pro	Pro	Leu	Ile	Pro	Phe	Met	Pro	Leu	Leu	Ile	195	200	205	
Lys	Asp	Met	Thr	Phe	Thr	His	Glu	Gly	Asn	Lys	Thr	Phe	Ile	Asp	Asn	210	215	220	
Leu	Val	Asn	Phe	Glu	Lys	Met	Arg	Met	Ile	Ala	Asn	Thr	Ala	Arg	Thr	225	230	235	240
Val	Arg	Tyr	Tyr	Arg	Ser	Gln	Pro	Phe	Asn	Pro	Asp	Ala	Ala	Gln	Ala	245	250	255	
Asn	Lys	Asn	His	Gln	Asp	Val	Arg	Ser	Tyr	Val	Arg	Gln	Leu	Asn	Val	260	265	270	
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Arg Arg Pro
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<211> 3013
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (407) .. (2953)

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Met Val Leu
1
tgg aaa cgg gct cta aca atg aca gga ttc ctg aca agg aga aca cac 463
Trp Lys Arg Ala Leu Thr Met Thr Gly Phe Leu Thr Arg Arg Thr His
5 10 15
ctc att gaa cct cac gtt cct ctt cgt cct gct aac acc att acc aag 511
Leu Ile Glu Pro His Val Pro Leu Arg Pro Ala Asn Thr Ile Thr Lys
20 25 30 35
gtc cct tca gag aag atc ctc aga gct gga aaa att tta cga aat gcc 559
Val Pro Ser Glu Lys Ile Leu Arg Ala Gly Lys Ile Leu Arg Asn Ala
40 45 50
att ctc tct cga gca cct cac atg ata aga gat aga aaa tac cac cta 607
Ile Leu Ser Arg Ala Pro His Met Ile Arg Asp Arg Lys Tyr His Leu
55 60 65
aag aca tac aga caa tgc tgt gtg gga act gaa ctg gtg gac tgg atg 655
Lys Thr Tyr Arg Gln Cys Cys Val Gly Thr Glu Leu Val Asp Trp Met
70 75 80
atc gac gag aca cca tgt gtt cac tcc cgg act caa gct gtt ggc atg 703
Ile Asp Glu Thr Pro Cys Val His Ser Arg Thr Gln Ala Val Gly Met
85 90 95
tgg caa gtc ctg tta gaa gat ggt gtt ctc aac cac gtg gac cag gag 751
Trp Gln Val Leu Leu Glu Asp Gly Val Leu Asn His Val Asp Gln Glu

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cac gag gat gcc cct ttg cct act gag gag gag aag aag gag tgt gat His Glu Asp Ala Pro Leu Pro Thr Glu Glu Glu Lys Lys Glu Cys Asp 135 140 145				847
gag gag ctc cag gac acc atg ctg ctg ctg tca cag atg ggc ccc gac Glu Glu Leu Gln Asp Thr Met Leu Leu Leu Ser Gln Met Gly Pro Asp 150 155 160				895
gcc cac atg agg atg atc ctt cgc aaa cca cct ggc cag agg act gtg Ala His Met Arg Met Ile Leu Arg Lys Pro Pro Gly Gln Arg Thr Val 165 170 175				943
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atc ata gtc aag atg agt tcc gga gga gaa aag gtg gtg ctc aaa cct Ile Ile Val Lys Met Ser Ser Gly Gly Glu Lys Val Val Leu Lys Pro 550 555 560	2095

aat gat gtt tca gta ttt acg acg ctc acc att aat gga cgc ctg ttt Asn Asp Val Ser Val Phe Thr Thr Leu Thr Ile Asn Gly Arg Leu Phe 565 570 575	2143
gct tgc ccg cga gag caa ttc gat tca ctg act ccc tta cca gaa cag Ala Cys Pro Arg Glu Gln Phe Asp Ser Leu Thr Pro Leu Pro Glu Gln 580 585 590 595	2191
gaa ggc cca act gtt gga aca gtg gga act ttt gaa ctg atg agc tcc Glu Gly Pro Thr Val Gly Thr Val Gly Thr Phe Glu Leu Met Ser Ser 600 605 610	2239
aaa gat tta gca tac cag atg aca att tat gat tgg gaa ctc ttc aac Lys Asp Leu Ala Tyr Gln Met Thr Ile Tyr Asp Trp Glu Leu Phe Asn 615 620 625	2287
tgc gtg cat gag ctg gag cta atc tat cac aca ttt gga agg cat aat Cys Val His Glu Leu Glu Leu Ile Tyr His Thr Phe Gly Arg His Asn 630 635 640	2335
ttt aaa aag acc aca gca aac ttg gat ttg ttc ctg agg aga ttt aat Phe Lys Lys Thr Thr Ala Asn Leu Asp Leu Phe Leu Arg Arg Phe Asn 645 650 655	2383
gaa att cag ttt tgg gtc gtc act gag atc tgc ctt tgt tct cag ctc Glu Ile Gln Phe Trp Val Val Thr Glu Ile Cys Leu Cys Ser Gln Leu 660 665 670 675	2431
agc aag cgt gtt cag cta tta aaa aaa ttt att aag ata gca gcc cac Ser Lys Arg Val Gln Leu Leu Lys Lys Phe Ile Lys Ile Ala Ala His 680 685 690	2479
tgt aag gag tat aaa aat ctg aat tcc ttt ttt gcc atc gtc atg gga Cys Lys Glu Tyr Lys Asn Leu Asn Ser Phe Phe Ala Ile Val Met Gly 695 700 705	2527
cta agt aac att gct gtg agc cgc ttg gca cta acg tgg gag aaa ctg Leu Ser Asn Ile Ala Val Ser Arg Leu Ala Leu Thr Trp Glu Lys Leu 710 715 720	2575
cca agc aag ttc aag aag ttc tat gcg gag ttt gaa agt tta atg gac Pro Ser Lys Phe Lys Lys Phe Tyr Ala Glu Phe Glu Ser Leu Met Asp 725 730 735	2623
cct tca agg aac cac agg gcc tac agg ctg aca gta gct aag ctg gaa Pro Ser Arg Asn His Arg Ala Tyr Arg Leu Thr Val Ala Lys Leu Glu 740 745 750 755	2671
cct cct ctc atc ccc ttc atg cct ttg ctc att aaa gat atg aca ttt Pro Pro Leu Ile Pro Phe Met Pro Leu Leu Ile Lys Asp Met Thr Phe 760 765 770	2719
act cat gag ggg aac aag acg ttc att gac aat cta gta aac ttt gaa Thr His Glu Gly Asn Lys Thr Phe Ile Asp Asn Leu Val Asn Phe Glu 775 780 785	2767
aaa atg cgc atg att gca aat acg gcc aga aca gtg aga tac tac agg	2815

Lys Met Arg Met Ile Ala Asn Thr Ala Arg Thr Val Arg Tyr Tyr Arg
 790 795 800
 agc caa ccc ttc aat cct gat gca gct caa gct aat aag aac cat cag 2863
 Ser Gln Pro Phe Asn Pro Asp Ala Ala Gln Ala Asn Lys Asn His Gln
 805 810 815
 gat gtc cgg agt tat gta cgg caa tta aat gtg att gac aac cag aga 2911
 Asp Val Arg Ser Tyr Val Arg Gln Leu Asn Val Ile Asp Asn Gln Arg
 820 825 830 835
 act tta tca cag atg tca cac aga tta gag cct cgt cga cca 2953
 Thr Leu Ser Gln Met Ser His Arg Leu Glu Pro Arg Arg Pro
 840 845
 tagacatttc aaatgccc aa agcaacagtt tgtctccagt ccacaatttt caaaaatgcc 3013

<210> 18
 <211> 849
 <212> PRT
 <213> Homo sapiens

<400> 18

Met Val Leu Trp Lys Arg Ala Leu Thr Met Thr Gly Phe Leu Thr Arg
 1 5 10 15

Arg Thr His Leu Ile Glu Pro His Val Pro Leu Arg Pro Ala Asn Thr
 20 25 30

Ile Thr Lys Val Pro Ser Glu Lys Ile Leu Arg Ala Gly Lys Ile Leu
 35 40 45

Arg Asn Ala Ile Leu Ser Arg Ala Pro His Met Ile Arg Asp Arg Lys
 50 55 60

Tyr His Leu Lys Thr Tyr Arg Gln Cys Cys Val Gly Thr Glu Leu Val
 65 70 75 80

Asp Trp Met Ile Asp Glu Thr Pro Cys Val His Ser Arg Thr Gln Ala
 85 90 95

Val Gly Met Trp Gln Val Leu Leu Glu Asp Gly Val Leu Asn His Val
 100 105 110

Asp Gln Glu His His Phe Gln Asp Phe Tyr Leu Phe Tyr Arg Phe Leu
 115 120 125

Asp Asp Glu His Glu Asp Ala Pro Leu Pro Thr Glu Glu Glu Lys Lys
 130 135 140

Glu Cys Asp Glu Glu Leu Gln Asp Thr Met Leu Leu Leu Ser Gln Met
 145 150 155 160

Gly Pro Asp Ala His Met Arg Met Ile Leu Arg Lys Pro Pro Gly Gln
 165 170 175

Arg Thr Val Asp Asp Leu Glu Ile Ile Tyr Glu Glu Leu Leu His Ile
 180 185 190

Lys Ala Leu Ser His Leu Ser Thr Thr Val Lys Arg Glu Leu Ala Gly
 195 200 205

Val Leu Ile Phe Glu Ser His Ala Lys Gly Gly Thr Val Leu Phe Asn
 210 215 220

Gln Gly Glu Glu Gly Thr Ser Trp Tyr Ile Ile Leu Lys Gly Ser Val
 225 230 235 240

Asn Val Val Ile Tyr Gly Lys Gly Val Val Cys Thr Leu His Glu Gly
 245 250 255

Asp Asp Phe Gly Lys Leu Ala Leu Val Asn Asp Ala Pro Arg Ala Ala
 260 265 270

Ser Ile Val Leu Arg Glu Asp Asn Cys His Phe Leu Arg Val Asp Lys
 275 280 285

Glu Asp Phe Asn Arg Ile Leu Arg Asp Val Glu Ala Asn Thr Val Arg
 290 295 300

Leu Lys Glu His Asp Gln Asp Val Leu Val Leu Glu Lys Val Pro Ala
 305 310 315 320

Gly Asn Arg Ala Ser Asn Gln Gly Asn Ser Gln Pro Gln Gln Lys Tyr
 325 330 335

Thr Val Met Ser Gly Thr Pro Glu Lys Ile Leu Glu His Phe Leu Glu
 340 345 350

Thr Ile Arg Leu Glu Ala Thr Leu Asn Glu Ala Thr Asp Ser Val Leu

355	360	365
Asn Asp Phe Ile Met Met His Cys Val Phe Met Pro Asn Thr Gln Leu		
370	375	380
Cys Pro Ala Leu Val Ala His Tyr His Ala Gln Pro Ser Gln Gly Thr		
385	390	395 400
Glu Gln Glu Lys Met Asp Tyr Ala Leu Asn Asn Lys Arg Arg Val Ile		
405	410	415
Arg Leu Val Leu Gln Trp Ala Ala Met Tyr Gly Asp Leu Leu Gln Glu		
420	425	430
Asp Asp Val Ser Met Ala Phe Leu Glu Glu Phe Tyr Val Ser Val Ser		
435	440	445
Asp Asp Ala Arg Met Ile Ala Ala Leu Lys Glu Gln Leu Pro Glu Leu		
450	455	460
Glu Lys Ile Val Lys Gln Ile Ser Glu Asp Ala Lys Ala Pro Gln Lys		
465	470	475 480
Lys His Lys Val Leu Leu Gln Gln Phe Asn Thr Gly Asp Glu Arg Ala		
485	490	495
Gln Lys Arg Gln Pro Ile Arg Gly Ser Asp Glu Val Leu Phe Lys Val		
500	505	510
Tyr Cys Met Asp His Thr Tyr Thr Thr Ile Arg Val Pro Val Ala Thr		
515	520	525
Ser Val Lys Glu Val Ile Ser Ala Val Ala Asp Lys Leu Gly Ser Gly		
530	535	540
Glu Gly Leu Ile Ile Val Lys Met Ser Ser Gly Gly Glu Lys Val Val		
545	550	555 560
Leu Lys Pro Asn Asp Val Ser Val Phe Thr Thr Leu Thr Ile Asn Gly		
565	570	575
Arg Leu Phe Ala Cys Pro Arg Glu Gln Phe Asp Ser Leu Thr Pro Leu		
580	585	590

Pro Glu Gln Glu Gly Pro Thr Val Gly Thr Val Gly Thr Phe Glu Leu
595 600 605

Met Ser Ser Lys Asp Leu Ala Tyr Gln Met Thr Ile Tyr Asp Trp Glu
610 615 620

Leu Phe Asn Cys Val His Glu Leu Glu Leu Ile Tyr His Thr Phe Gly
625 630 635 640

Arg His Asn Phe Lys Lys Thr Thr Ala Asn Leu Asp Leu Phe Leu Arg
645 650 655

Arg Phe Asn Glu Ile Gln Phe Trp Val Val Thr Glu Ile Cys Leu Cys
660 665 670

Ser Gln Leu Ser Lys Arg Val Gln Leu Leu Lys Lys Phe Ile Lys Ile
675 680 685

Ala Ala His Cys Lys Glu Tyr Lys Asn Leu Asn Ser Phe Phe Ala Ile
690 695 700

Val Met Gly Leu Ser Asn Ile Ala Val Ser Arg Leu Ala Leu Thr Trp
705 710 715 720

Glu Lys Leu Pro Ser Lys Phe Lys Lys Phe Tyr Ala Glu Phe Glu Ser
725 730 735

Leu Met Asp Pro Ser Arg Asn His Arg Ala Tyr Arg Leu Thr Val Ala
740 745 750

Lys Leu Glu Pro Pro Leu Ile Pro Phe Met Pro Leu Leu Ile Lys Asp
755 760 765

Met Thr Phe Thr His Glu Gly Asn Lys Thr Phe Ile Asp Asn Leu Val
770 775 780

Asn Phe Glu Lys Met Arg Met Ile Ala Asn Thr Ala Arg Thr Val Arg
785 790 795 800

Tyr Tyr Arg Ser Gln Pro Phe Asn Pro Asp Ala Ala Gln Ala Asn Lys
805 810 815

Asn His Gln Asp Val Arg Ser Tyr Val Arg Gln Leu Asn Val Ile Asp
820 825 830

Asn Gln Arg Thr Leu Ser Gln Met Ser His Arg Leu Glu Pro Arg Arg
835 840 845

Pro

<210> 19
<211> 24
<212> PRT
<213> Caenorhabditis elegans

<400> 19

Phe Val Gln Ala Ser Pro Ser Asp Ile Ser Thr Ser Leu Ser His Ile
1 5 10 15

Asp Tyr Arg Val Leu Ser Arg Ile
20

<210> 20
<211> 43
<212> PRT
<213> Caenorhabditis elegans

<400> 20

Arg Ala Glu Ile Leu Val Lys Phe Val His Val Ala Lys His Leu Arg
1 5 10 15

Lys Ile Asn Asn Phe Asn Thr Leu Met Ser Val Val Gly Gly Ile Thr
20 25 30

His Ser Ser Val Ala Arg Leu Ala Lys Thr Tyr
35 40

<210> 21
<211> 22
<212> PRT
<213> Caenorhabditis elegans

<400> 21

Phe Arg Ile Pro Ile Ile Gly Val His Leu Lys Asp Leu Val Ala Ile
1 5 10 15

Asn Cys Ser Gly Ala Asn
20

<210> 22
<211> 24
<212> PRT
<213> Homo sapiens

<400> 22

Leu His Asp Phe His Ser His Glu Ile Ala Glu Gln Leu Thr Leu Leu
1 5 10 15

Asp Ala Glu Leu Phe Tyr Lys Ile
20

<210> 23
<211> 41
<212> PRT
<213> Homo sapiens

<400> 23

Arg Glu Arg Leu Leu Leu Lys Phe Ile Lys Ile Met Lys His Leu Arg
1 5 10 15

Lys Leu Asn Asn Phe Asn Ser Tyr Leu Ala Ile Leu Ser Ala Leu Asp
20 25 30

Ser Ala Pro Ile Arg Arg Leu Glu Trp
35 40

<210> 24
<211> 22
<212> PRT
<213> Homo sapiens

<400> 24

Pro Cys Ile Pro Tyr Leu Gly Leu Ile Leu Gln Asp Leu Thr Phe Val
1 5 10 15

His Leu Gly Asn Pro Asp
20

<210> 25
<211> 24
<212> PRT

<213> Mus musculus

<400> 25

Leu Leu Asp Ile Asp Pro Tyr Thr Tyr Ala Thr Gln Leu Thr Val Leu
1 5 10 15

Glu His Asp Leu Tyr Leu Arg Ile
20

<210> 26

<211> 43

<212> PRT

<213> Mus musculus

<400> 26

Arg Ser Lys Leu Thr Gln Tyr Phe Val Thr Val Ala Gln His Cys Lys
1 5 10 15

Glu Leu Asn Asn Phe Ser Ser Met Thr Ala Ile Val Ser Ala Leu Tyr
20 25 30

Ser Ser Pro Ile Tyr Arg Leu Lys Lys Thr Trp
35 40

<210> 27

<211> 22

<212> PRT

<213> Mus musculus

<400> 27

Ala Cys Val Pro Phe Phe Gly Val Tyr Leu Ser Asp Leu Thr Phe Thr
1 5 10 15

Phe Val Gly Asn Pro Asp
20

<210> 28

<211> 24

<212> PRT

<213> Rattus rattus

<400> 28

Phe Glu Asn His Ser Ala Met Glu Ile Ala Glu Gln Leu Thr Leu Leu
1 5 10 15

Asp His Leu Val Phe Lys Ser Ile
20

<210> 29
<211> 43
<212> PRT
<213> Rattus rattus

<400> 29

Arg Ala Ser Thr Ile Glu Lys Trp Val Ala Val Ala Asp Ile Cys Arg
1 5 10 15

Cys Leu His Asn Tyr Asn Ala Val Leu Glu Ile Thr Ser Ser Ile Asn
20 25 30

Arg Ser Ala Ile Phe Arg Leu Lys Lys Thr Trp
35 40

<210> 30
<211> 22
<212> PRT
<213> Rattus rattus

<400> 30

Pro Cys Val Pro Tyr Leu Gly Met Tyr Leu Thr Asp Leu Ala Phe Leu
1 5 10 15

Glu Glu Gly Thr Pro Asn
20

<210> 31
<211> 24
<212> PRT
<213> Homo sapiens

<400> 31

Leu Leu Thr Leu His Pro Ile Glu Ile Ala Arg Gln Leu Thr Leu Leu
1 5 10 15

Glu Ser Asp Leu Tyr Arg Ala Val
20

<210> 32
<211> 43
<212> PRT
<213> Homo sapiens

<400> 32

Arg Val Ala Val Val Ser Arg Ile Ile Glu Ile Leu Gln Val Phe Gln
1 5 10 15

Glu Leu Asn Asn Phe Asn Gly Val Leu Glu Val Val Ser Ala Met Asn
20 25 30

Ser Ser Pro Val Tyr Arg Leu Asp Arg Thr Phe
35 40

<210> 33

<211> 23

<212> PRT

<213> Homo sapiens

<400> 33

Pro Pro Cys Val Pro Phe Phe Gly Ile Tyr Leu Thr Asn Ile Leu Lys
1 5 10 15

Thr Glu Glu Gly Asn Pro Glu
20

<210> 34

<211> 24

<212> PRT

<213> Saccharomyces cerevisiae

<400> 34

Ala Leu Asn Val Ser Pro Trp Ser Leu Ala Lys Thr Leu Thr Leu Leu
1 5 10 15

Glu Ser Ser Leu Tyr Leu Asp Ile
20

<210> 35

<211> 43

<212> PRT

<213> Saccharomyces cerevisiae

<400> 35

Gln Thr His Thr Ile Ser Tyr Trp Leu Gln Val Ala Leu Ala Cys Leu
1 5 10 15

Tyr Leu Arg Asn Leu Asn Ser Leu Ala Ser Ile Ile Thr Ser Leu Gln

20

25

30

Asn His Ser Ile Glu Arg Leu Ser Leu Pro Ile
 35 40

<210> 36
 <211> 22
 <212> PRT
 <213> *Saccharomyces cerevisiae*

<400> 36

Pro Cys Val Pro Phe Thr Ser Leu Leu Ile Arg Asp Ile Thr Phe Ile
 1 5 10 15

Arg Asp Gly Asn Asp Thr
 20

<210> 37
 <211> 20
 <212> PRT
 <213> *Caenorhabditis elegans*

<400> 37

Ala Val Phe Lys His Tyr Asp His Asp Arg Asp Gly Phe Ile Ser Gln
 1 5 10 15

Glu Glu Phe Gln
 20

<210> 38
 <211> 20
 <212> PRT
 <213> *Homo sapiens*

<400> 38

Glu Ala Phe Ser Leu Phe Asp Lys Asp Gly Asp Gly Thr Ile Thr Thr
 1 5 10 15

Lys Phe Leu Gly
 20

<210> 39
 <211> 20
 <212> PRT
 <213> *Homo sapiens*

<400> 39

Leu Met Leu Lys Leu Phe Asp Ser Asn Asn Asp Gly Lys Leu Glu Leu
1 5 10 15

Thr Glu Met Ala
20

<210> 40

<211> 20

<212> PRT

<213> Homo sapiens

<400> 40

Phe Ala Phe Arg Ile Tyr Asp Met Asp Lys Asp Gly Tyr Ile Ser Asn
1 5 10 15

Gly Glu Leu Phe
20

<210> 41

<211> 20

<212> PRT

<213> Homo sapiens

<400> 41

Lys Val Phe His Met Leu Asp Lys Asp Lys Ser Gly Phe Ile Glu Glu
1 5 10 15

Asp Glu Leu Gly
20

<210> 42

<211> 20

<212> PRT

<213> Homo sapiens

<400> 42

Glu Cys Phe Arg Ile Phe Asp Arg Lys Ala Asp Gly Tyr Ile Asp Pro
1 5 10 15

Glu Glu Leu Ala
20

<210> 43

<211> 50

<212> PRT
<213> Caenorhabditis elegans

<400> 43

His Asn Phe His Glu Thr Thr Phe Leu Thr Pro Thr Thr Cys Asn His
1 5 10 15

Cys Asn Lys Leu Leu Trp Gly Ile Leu Arg Gln Gly Phe Lys Cys Lys
20 25 30

Asp Cys Gly Leu Ala Val His Ser Cys Cys Lys Ser Asn Ala Val Ala
35 40 45

Glu Cys
50

<210> 44
<211> 50
<212> PRT
<213> Homo sapiens

<400> 44

His Lys Phe Ile Ala Arg Phe Phe Lys Gln Pro Thr Phe Cys Ser His
1 5 10 15

Cys Thr Asp Phe Ile Trp Gly Phe Gly Lys Gln Gly Phe Gln Cys Gln
20 25 30

Val Cys Cys Phe Val Val His Lys Arg Cys His Glu Phe Val Thr Phe
35 40 45

Ser Cys
50

<210> 45
<211> 50
<212> PRT
<213> Homo sapiens

<400> 45

His Lys Phe Thr Ala Arg Phe Phe Lys Gln Pro Thr Phe Cys Ser His
1 5 10 15

Cys Thr Asp Phe Ile Trp Gly Phe Gly Lys Gln Gly Phe Gln Cys Gln
20 25 30

Val Cys Cys Phe Val Val His Lys Arg Cys His Glu Phe Val Thr Phe
 35 40 45

Ser Cys
 50

<210> 46
 <211> 50
 <212> PRT
 <213> Homo sapiens

<400> 46

His Lys Phe Thr Ala Arg Phe Phe Lys Gln Pro Thr Phe Cys Ser His
 1 5 10 15

Cys Thr Asp Phe Ile Trp Gly Ile Gly Lys Gln Gly Leu Gln Cys Gln
 20 25 30

Val Cys Ser Phe Val Val His Arg Arg Cys His Glu Phe Val Thr Phe
 35 40 45

Glu Cys
 50

<210> 47
 <211> 24
 <212> PRT
 <213> Caenorhabditis elegans

<400> 47

Leu His Leu Ile Asp Ser Gln Glu Leu Ala His Gln Leu Phe Leu Phe
 1 5 10 15

His Leu Gln Leu Leu Arg Ser Thr
 20

<210> 48
 <211> 43
 <212> PRT
 <213> Homo sapiens

<400> 48

Arg Val Gln Leu Leu Lys Lys Phe Ile Lys Ile Ala Ala His Cys Lys
 1 5 10 15

Glu Tyr Lys Asn Leu Asn Ser Phe Phe Ala Ile Val Met Gly Leu Ser
20 25 30

Asn Ile Ala Val Ser Arg Leu Ala Leu Thr Trp
35 40

<210> 49
<211> 43
<212> PRT
<213> Caenorhabditis elegans

<400> 49

Arg Met Glu Ile Leu Lys Lys Phe Ile Ser Ile Ala Thr Ile Ala Arg
1 5 10 15

Glu Tyr Arg Asp Leu Leu Thr Val Phe Ala Ile Thr Leu Gly Leu Ser
20 25 30

Met Thr Ser Ile Ser Arg Leu Thr Leu Thr Trp
35 40

<210> 50
<211> 22
<212> PRT
<213> Caenorhabditis elegans

<400> 50

Pro Tyr Ile Pro Phe Val Pro Leu Ile Leu Lys Asp Leu Met Phe Ile
1 5 10 15

His Gln Gly Asn Lys Ser
20

<210> 51
<211> 69
<212> PRT
<213> Caenorhabditis elegans

<400> 51

Val Phe Arg Gln Gly Glu Ile Gly Val Tyr Trp Tyr Ile Val Leu Lys
1 5 10 15

Gly Ala Val Glu Val Asn Val Asn Gly Lys Ile Val Cys Leu Leu Arg
20 25 30

Glu Gly Asp Asp Phe Gly Lys Leu Ala Leu Val Asn Asp Leu Pro Arg
35 40 45

Ala Ala Thr Ile Val Thr Tyr Glu Asp Asp Ser Met Phe Leu Val Val
50 55 60

Asp Lys His His Phe
65

<210> 52
<211> 67
<212> PRT
<213> Homo sapiens

<400> 52

Val Ile Gln Gln Gly Asp Glu Gly Asp Asn Phe Tyr Val Ile Asp Gln
1 5 10 15

Gly Glu Thr Asp Val Tyr Val Asn Asn Glu Trp Ala Thr Val Gly Glu
20 25 30

Gly Gly Ser Phe Gly Glu Leu Ala Leu Ile Tyr Gly Thr Pro Arg Ala
35 40 45

Ala Thr Val Lys Ala Lys Thr Asn Val Lys Leu Trp Gly Ile Asp Arg
50 55 60

Asp Ser Tyr
65

<210> 53
<211> 71
<212> PRT
<213> Homo sapiens

<400> 53

Val Ile Asp Gln Gly Asp Asp Gly Asp Asn Phe Tyr Val Ile Glu Arg
1 5 10 15

Gly Thr Tyr Asp Ile Leu Val Thr Lys Asp Asn Gln Thr Arg Val Gly
20 25 30

Gln Tyr Asp Asn Arg Gly Ser Phe Gly Glu Leu Ala Leu Met Tyr Asn

35

40

45

Thr Pro Arg Ala Ala Thr Ile Val Ala Thr Ser Glu Gly Ser Leu Trp
 50 55 60

Gly Leu Asp Arg Val Thr Phe
 65 70

<210> 54
 <211> 73
 <212> PRT
 <213> Homo sapiens

<400> 54

Ile Val Val Gln Gly Glu Pro Gly Asp Glu Phe Phe Ile Ile Leu Glu
 1 5 10 15

Gly Ser Ala Ala Val Leu Gln Arg Arg Ser Glu Asn Glu Glu Phe Val
 20 25 30

Val Gly Arg Leu Gly Pro Ser Asp Tyr Phe Gly Glu Ile Ala Leu Leu
 35 40 45

Met Asn Arg Pro Arg Ala Ala Thr Val Val Ala Arg Gly Pro Leu Lys
 50 55 60

Cys Val Lys Leu Asp Arg Pro Arg Phe
 65 70

<210> 55
 <211> 79
 <212> PRT
 <213> Homo sapiens

<400> 55

Ile Ile Thr Gln Gly Glu Lys Ala Asp Ser Phe Tyr Ile Ile Glu Ser
 1 5 10 15

Gly Glu Val Ser Ile Leu Ile Arg Ser Arg Thr Lys Ser Asn Lys Asp
 20 25 30

Gly Gly Asn Gln Glu Val Glu Ile Ala Arg His Lys Gly Gln Tyr Phe
 35 40 45

Gly Glu Leu Ala Leu Val Thr Asn Lys Pro Arg Ala Ala Ser Ala Tyr
 50 55 60

Ala Val Gly Asp Val Lys Cys Leu Val Met Asp Val Gln Ala Phe
 65 70 75

<210> 56
 <211> 67
 <212> PRT
 <213> Homo sapiens

<400> 56

Ile Ile Lys Glu Gly Asp Val Gly Ser Leu Val Tyr Val Met Glu Asp
 1 5 10 15

Gly Lys Val Glu Val Thr Lys Glu Gly Val Lys Cys Thr Met Gly Pro
 20 25 30

Gly Lys Val Phe Gly Glu Leu Ala Ile Leu Tyr Asn Cys Thr Arg Thr
 35 40 45

Ala Thr Val Lys Thr Leu Val Asn Val Lys Leu Trp Ala Ile Asp Arg
 50 55 60

Gln Cys Phe
 65

<210> 57
 <211> 67
 <212> PRT
 <213> Homo sapiens

<400> 57

Ile Ile Lys Glu Gly Asp Val Gly Ser Leu Val Tyr Val Met Glu Asp
 1 5 10 15

Gly Lys Val Glu Val Thr Lys Glu Gly Val Lys Cys Thr Met Gly Pro
 20 25 30

Gly Lys Val Phe Gly Glu Leu Ala Ile Leu Tyr Asn Cys Thr Arg Thr
 35 40 45

Ala Thr Val Lys Thr Leu Val Asn Val Lys Leu Trp Ala Ile Asp Arg
 50 55 60

Gln Cys Phe
65

<210> 58
<211> 67
<212> PRT
<213> Homo sapiens

<400> 58

Ile Ile Lys Gln Gly Glu Pro Gly Asn His Ile Phe Val Leu Ala Glu
1 5 10 15

Gly Arg Leu Glu Val Phe Gln Gly Lys Leu Leu Ser Ser Ile Pro Met
20 25 30

Trp Thr Thr Phe Gly Glu Leu Ala Ile Leu Tyr Asn Cys Thr Arg Thr
35 40 45

Ala Ser Val Lys Ala Ile Thr Asn Val Lys Thr Trp Ala Leu Asp Arg
50 55 60

Glu Val Phe
65

<210> 59
<211> 1011
<212> PRT
<213> Homo sapiens

<400> 59

Met Val Ala Ala His Ala Ala His Ser Ser Ser Ser Ala Glu Trp Ile
1 5 10 15

Ala Cys Leu Asp Lys Arg Pro Leu Glu Arg Ser Ser Glu Asp Val Asp
20 25 30

Ile Ile Phe Thr Arg Leu Lys Glu Val Lys Ala Phe Glu Lys Phe His
35 40 45

Pro Asn Leu Leu His Gln Ile Cys Leu Cys Gly Tyr Tyr Glu Asn Leu
50 55 60

Glu Lys Gly Ile Thr Leu Phe Arg Gln Gly Asp Ile Gly Thr Asn Trp
65 70 75 80

Tyr Ala Val Leu Ala Gly Ser Leu Asp Val Lys Val Ser Glu Thr Ser
 85 90 95

Ser His Gln Asp Ala Val Thr Ile Cys Thr Leu Gly Ile Gly Thr Ala
 100 105 110

Phe Gly Glu Ser Ile Leu Asp Asn Thr Pro Arg His Ala Thr Ile Val
 115 120 125

Thr Arg Glu Ser Ser Glu Leu Leu Arg Ile Glu Gln Lys Asp Phe Lys
 130 135 140

Ala Leu Trp Glu Lys Tyr Arg Gln Tyr Met Ala Gly Leu Leu Ala Pro
 145 150 155 160

Pro Tyr Gly Val Met Glu Thr Gly Ser Asn Asn Asp Arg Ile Pro Asp
 165 170 175

Lys Glu Asn Thr Pro Leu Ile Glu Pro His Val Pro Leu Arg Pro Ala
 180 185 190

Asn Thr Ile Thr Lys Val Pro Ser Glu Lys Ile Leu Arg Ala Gly Lys
 195 200 205

Ile Leu Arg Asn Ala Ile Leu Ser Arg Ala Pro His Met Ile Arg Asp
 210 215 220

Arg Lys Tyr His Leu Lys Thr Tyr Arg Gln Cys Cys Val Gly Thr Glu
 225 230 235 240

Leu Val Asp Trp Met Met Gln Gln Thr Pro Cys Val His Ser Arg Thr
 245 250 255

Gln Ala Val Gly Met Trp Gln Val Leu Leu Glu Asp Gly Val Leu Asn
 260 265 270

His Val Asp Gln Glu His His Phe Gln Asp Lys Tyr Leu Phe Tyr Arg
 275 280 285

Phe Leu Asp Asp Glu His Glu Asp Ala Pro Leu Pro Thr Glu Glu Glu
 290 295 300

Lys Lys Glu Cys Asp Glu Glu Leu Gln Asp Thr Met Leu Leu Leu Ser
 305 310 315 320

Gln Met Gly Pro Asp Ala His Met Arg Met Ile Leu Arg Lys Pro Pro
 325 330 335

Gly Gln Arg Thr Val Asp Asp Leu Glu Ile Ile Tyr Glu Glu Leu Leu
 340 345 350

His Ile Lys Ala Leu Ser His Leu Ser Thr Thr Val Lys Arg Glu Leu
 355 360 365

Ala Gly Val Leu Ile Phe Glu Ser His Ala Lys Gly Gly Thr Val Leu
 370 375 380

Phe Asn Gln Gly Glu Glu Gly Thr Ser Trp Tyr Ile Ile Leu Lys Gly
 385 390 395 400

Ser Val Asn Val Val Ile Tyr Gly Lys Gly Val Val Cys Thr Leu His
 405 410 415

Glu Gly Asp Asp Phe Gly Lys Leu Ala Leu Val Asn Asp Ala Pro Arg
 420 425 430

Ala Ala Ser Ile Val Leu Arg Glu Asp Asn Cys His Phe Leu Arg Val
 435 440 445

Asp Lys Glu Asp Phe Asn Arg Ile Leu Arg Asp Val Glu Ala Asn Thr
 450 455 460

Val Arg Leu Lys Glu His Asp Gln Asp Val Leu Val Leu Glu Lys Val
 465 470 475 480

Pro Ala Gly Asn Arg Ala Ser Asn Gln Gly Asn Ser Gln Pro Gln Gln
 485 490 495

Lys Tyr Thr Val Met Ser Gly Thr Pro Glu Lys Ile Leu Glu His Phe
 500 505 510

Leu Glu Thr Ile Arg Leu Glu Ala Thr Leu Asn Glu Ala Thr Asp Ser
 515 520 525

Val Leu Asn Asp Phe Ile Met Met His Cys Val Phe Met Pro Asn Thr
 530 535 540

Gln Leu Cys Pro Ala Leu Val Ala His Tyr His Ala Gln Pro Ser Gln
 545 550 555 560

Gly Thr Glu Gln Glu Lys Met Asp Tyr Ala Leu Asn Asn Lys Arg Arg
 565 570 575

Val Ile Arg Leu Val Leu Gln Trp Ala Ala Met Tyr Gly Asp Leu Leu
 580 585 590

Gln Glu Asp Asp Val Ser Met Ala Phe Leu Glu Glu Phe Tyr Val Ser
 595 600 605

Val Ser Asp Asp Ala Arg Met Ile Ala Ala Leu Lys Glu Gln Leu Pro
 610 615 620

Glu Leu Glu Lys Ile Val Lys Gln Ile Ser Glu Asp Ala Lys Ala Pro
 625 630 635 640

Gln Lys Lys His Lys Val Leu Leu Gln Gln Phe Asn Thr Gly Asp Glu
 645 650 655

Arg Ala Gln Lys Arg Gln Pro Ile Arg Gly Ser Asp Glu Val Leu Phe
 660 665 670

Lys Val Tyr Cys Met Asp His Thr Tyr Thr Thr Ile Arg Val Pro Val
 675 680 685

Ala Thr Ser Val Lys Glu Val Ile Ser Ala Val Ala Asp Lys Leu Gly
 690 695 700

Ser Gly Glu Gly Leu Ile Ile Val Lys Met Ser Ser Gly Gly Glu Lys
 705 710 715 720

Val Val Leu Lys Pro Asn Asp Val Ser Val Phe Thr Thr Leu Thr Ile
 725 730 735

Asn Gly Arg Leu Phe Ala Cys Pro Arg Glu Gln Phe Asp Ser Leu Thr
 740 745 750

Pro Leu Pro Glu Gln Glu Gly Pro Thr Val Gly Thr Val Gly Thr Phe

755					760					765						
Glu	Leu	Met	Ser	Ser	Lys	Asp	Leu	Ala	Tyr	Gln	Met	Thr	Ile	Tyr	Asp	
770					775					780						
Trp	Glu	Leu	Phe	Asn	Cys	Val	His	Glu	Leu	Glu	Leu	Ile	Tyr	His	Thr	
785					790					795					800	
Phe	Gly	Arg	His	Asn	Phe	Lys	Lys	Thr	Thr	Ala	Asn	Leu	Asp	Leu	Phe	
805					810					815						
Leu	Arg	Arg	Phe	Asn	Glu	Ile	Gln	Phe	Trp	Val	Val	Thr	Glu	Ile	Cys	
820					825					830						
Leu	Cys	Ser	Gln	Leu	Ser	Lys	Arg	Val	Gln	Leu	Leu	Lys	Lys	Phe	Ile	
835					840					845						
Lys	Ile	Ala	Ala	His	Cys	Lys	Glu	Tyr	Lys	Asn	Leu	Asn	Ser	Phe	Phe	
850					855					860						
Ala	Ile	Val	Met	Gly	Leu	Ser	Asn	Ile	Ala	Val	Ser	Arg	Leu	Ala	Leu	
865					870					875					880	
Thr	Trp	Glu	Lys	Leu	Pro	Ser	Lys	Phe	Lys	Lys	Phe	Tyr	Ala	Glu	Phe	
885					890					895						
Glu	Ser	Leu	Met	Asp	Pro	Ser	Arg	Asn	His	Arg	Ala	Tyr	Arg	Leu	Thr	
900					905					910						
Val	Ala	Lys	Leu	Glu	Pro	Pro	Leu	Ile	Pro	Phe	Met	Pro	Leu	Leu	Ile	
915					920					925						
Lys	Asp	Met	Thr	Phe	Thr	His	Glu	Gly	Asn	Lys	Thr	Phe	Ile	Asp	Asn	
930					935					940						
Leu	Val	Asn	Phe	Glu	Lys	Met	Arg	Met	Ile	Ala	Asn	Thr	Ala	Arg	Thr	
945					950					955					960	
Val	Arg	Tyr	Tyr	Arg	Ser	Gln	Pro	Phe	Asn	Pro	Asp	Ala	Ala	Gln	Ala	
965					970					975						
Asn	Lys	Asn	His	Gln	Asp	Val	Arg	Ser	Tyr	Val	Arg	Gln	Leu	Asn	Val	
980					985					990						

Ile Asp Asn Gln Arg Thr Leu Ser Gln Met Ser His Arg Leu Glu Pro
 995 1000 1005

Arg Arg Pro
 1010

<210> 60
 <211> 20
 <212> PRT
 <213> Homo sapiens

<400> 60

Ser Val Phe Lys Asn Tyr Asp His Asp Gln Asp Gly Tyr Ile Ser Gln
 1 5 10 15

Glu Glu Phe Glu
 20

<210> 61
 <211> 50
 <212> PRT
 <213> Homo sapiens

<400> 61

His Asn Phe Gln Glu Thr Thr Tyr Leu Lys Pro Thr Phe Cys Asp Asn
 1 5 10 15

Cys Ala Gly Phe Leu Trp Gly Val Ile Lys Gln Gly Tyr Arg Cys Lys
 20 25 30

Asp Cys Gly Met Asn Cys His Lys Gln Cys Lys Asp Leu Val Val Phe
 35 40 45

Glu Cys
 50

<210> 62
 <211> 24
 <212> PRT
 <213> Rattus norvegicus

<400> 62

Phe Glu Leu Met Ser Ser Lys Asp Leu Ala Tyr Gln Met Thr Thr Tyr
 1 5 10 15

Asp Trp Glu Leu Phe Asn Cys Val
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<210> 63
<211> 24
<212> PRT
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<400> 63

Phe Asp His Leu Glu Pro Glu Glu Leu Ser Glu His Phe Thr Tyr Leu
1 5 10 15

Glu Phe Lys Ser Phe Arg Arg Ile
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<210> 64
<211> 43
<212> PRT
<213> Rattus norvegicus

<400> 64

Arg Val Gln Leu Leu Lys Lys Cys Ile Lys Ile Ala Ala His Cys Lys
1 5 10 15

Glu Tyr Lys Asn Leu Asn Ser Phe Phe Gly Ile Val Met Gly Leu Ser
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Asn Val Ala Glu Ser Arg Leu Ala Leu Thr Trp
35 40

<210> 65
<211> 43
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<400> 65

Arg Ala Glu Val Phe Ile Lys Phe Ile Gln Val Ala Gln Lys Leu His
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Gln Leu Gln Asn Phe Asn Thr Leu Met Ala Val Ile Gly Gly Leu Cys
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His Ser Ser Ile Ser Arg Leu Lys Glu Thr Ser
35 40

<210> 66
<211> 22
<212> PRT
<213> Rattus norvegicus

<400> 66

Pro Leu Ile Pro Phe Met Pro Leu Leu Ile Lys Asp Met Thr Phe Thr
1 5 10 15

His Glu Gly Asn Lys Thr
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<210> 67
<211> 22
<212> PRT
<213> Homo sapiens

<400> 67

Phe Lys Ile Pro Ile Leu Gly Val His Leu Lys Asp Leu Ile Ser Leu
1 5 10 15

Tyr Glu Ala Met Pro Asp
20